

## The Comparison of Serum Ghrelin Concentration in Obese and None Obese Men

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**Abstract—Background and Aim:** Ghrelin, an orexigenic hormone secreted from endocrine cells in the stomach and other tissues, has been shown to stimulate appetite and food intake. Some finding suggested that ghrelin level in obese people is higher than normal weight a person that stimulate appetite and led's to obesity. The purpose of this study was to compare fasting ghrelin concentration between normal and obese men. **Material and methods:** We examined anthropometrical markers and the baseline levels of insulin and the active form of ghrelin in 35 obese ( $BMI \geq 30$ ) and 30 no obese ( $20 \leq BMI \leq 25$ ) men. The data compared with T test ( $p > 0.05$ ). **Results:** There were no significant differences in basal insulin and basal ghrelin between two groups. In addition, ghrelin is not related with insulin resistance in two groups. **Conclusion:** our study demonstrated that the circulation ghrelin in obese men in similar to normal weight men. It is possible that in addition to ghrelin, there are other metabolic variables that affect appetite and food intake in obese men.

**Keywords-***Ghrelin, Obesity, Insulin, anthropometrical marker*

### I. INTRODUCTION

Ghrelin, a 28 acid amino- peptide and a novel growth hormone-releasing peptide is known peripheral orexigenic that reliably evokes feeding through a central action involving primarily the neuropeptide Y signaling pathway in

the hypothalamus (1). This peptide hormone is secreted mainly from the stomach and proximal small bowel, and regulates glucose homeostasis and stimulates growth hormone (GH) secretion (2,3), in addition to its effect on energy balance. In healthy people, plasma ghrelin concentration rise before meals and decrease after eating, with changes in plasma levels during meals varying two- to threefold (4). Some finding suggested that ghrelin level is increased in obesity related diseases. In this area, a recent study showed that plasma ghrelin levels were elevated in diabetes (5). These studies suggested that ghrelin is related to insulin resistance in obese people and decrease in ghrelin concentration led to decrease in insulin resistance. Recent epidemiologic studies have demonstrated that the prevalence of asthma and obesity are both increasing concomitantly, suggesting that these factors may be causally related (6).

Due to its role in the regulation of food intake, much of the research on ghrelin relates to obesity. However, ghrelin may also play significant roles in wasting syndromes, such as occurs in patients with COPD. In these states, ghrelin may stimulate food intake while decreasing fat oxidation. In humans, circulating ghrelin levels are decreased in acute states of positive energy balance such as obesity and are increased during fasting and starvation. The hypothesis that ghrelin could play a role in the regulation of glucose homeostasis and insulin secretion was based on the observation that, as shown in the previous sections, several biological activities of AG are mediated by the cholinergic

system/ vagus nerve, which also plays a pivotal role in the regulation of the endocrine pancreas. Ghrelin has gained considerable attention over the last decade for its unique role in regulating mealtime hunger and lipid metabolism, as well as short- and long-term energy homeostasis (7). Some studies stated that ghrelin concentration in obese people. There is conflict findings about difference in ghrelin concentration between obese and none obese people. Therefore in this study, we compared the concentration of ghrelin between obese and none obese males.

## II. MATERIAL AND METHODS

Thirty five Healthy volunteers between the ages of 35 and 50 years with a BMI between 29 and 36 kg/m<sup>2</sup> were recruited in this study. In addition thirty none obese males with a BMI between 20 and 25 kg/m<sup>2</sup> selected as control group by randomly. Subjects with a history or clinical evidence of impaired fasting glucose or diabetes, recent myocardial infarction, congestive heart failure, active liver or kidney disease, growth hormone deficiency or excess, neuroendocrine tumor, anemia, or who were on medications known to alter insulin sensitivity were excluded. The baseline levels of insulin, glucose and the active form of ghrelin measured in all participants of two groups after 10 - 12 overnight fast. Insulin resistance calculated by using of fasting glucose and insulin. The anthropometrical markers also measured. Multivariable logistic regression was performed to identify relation between ghrelin and other. *P* values smaller than 0.05 were accepted as significant.

## III. MATERIAL AND METHODS

The findings of regression analyses show that there is no relation between serum ghrelin and insulin resistance in obese males. In addition, there were no significant differences in basal insulin and basal ghrelin between two

groups. In addition, ghrelin is not related with insulin resistance in two groups.

## IV. CONCLUSION

The recent literature suggests that in addition to food intake and energy balance, ghrelin also controls glucose metabolism (8). Furthermore, current evidence suggests that ghrelin could contribute to the metabolic syndrome. It has been shown that ghrelin concentrations are reduced in different pathophysiological conditions including obesity, type 2 diabetic, and other conditions with metabolic disturbances (9). Preclinical studies support a role for ghrelin to regulate glucose metabolism as well as energy balance and GH secretion. The finding of our study demonstrated that serum ghrelin is not difference between obese and none obese males. Also, serum ghrelin is not a suitable predictor of insulin resistance of these peoples.

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